

**In the Drawings:**

Please replace page 20 of the drawings (which contained Figs 20, 21 and 22) with the replacement page 20 of the drawings enclosed herewith.

REMARKS

Amendments to the Drawings

The Examiner objected to the drawings because the reference character "122" had been used to designate both the left and right sides of Figure 21. A corrected drawing sheet is submitted, in which the reference character 122 on the right side of Fig 21 has been removed. The reference character "122" designates a "seal-engaging portion" (see page 13, lines 9 to 22 of the application as filed). The seal is shown in Fig 24. Also, the description on page 14, lines 7 to 9 describes the seal-engaging portion 122 as having undulations. Therefore, it is obvious that the reference character "122" was intended to designate the left side of Fig 21 only, which is the end having undulations that engage the seal of Fig 24. The corrected drawing sheet shows all figures appearing on the immediately prior version of the sheet, and is labelled in the top margin as "Replacement Sheet", as requested by the Examiner.

Amendments to the Claims

Claim 1 has been amended to incorporate the subject matter of original claim 2; specifically, that the sealing device comprises at least one annular cup device.

Claim 2 has consequently been cancelled.

Claim 4 has been amended to correct a grammatical error. The Examiner pointed out that no antecedent basis could be found for "the innermost casing". This claim wording has been corrected to read "an innermost casing".

Claim 5 has been amended so that it is consistent with amended claim 1.

Claim 11 has been amended to correct a typographical error.

New claim 24 has been added. Claim 24 specifies that the sealing device comprises at least one annular cup device. Basis for new claim 24 can be found in original claim 2.

New claim 25 has been added, which has basis in original claims 2 and 15.

No new matter has been added.

35 USC 102 Rejections in view of Gilbert (US 5,101,895)

Claims 1, 3, 4 and 12-14 were objected to under 35 USC 102(b) as being anticipated by Gilbert. Claim 1 is amended herein to incorporate the subject matter of claim 2 (the sealing device comprises at least one annular cup device). In contrast, Gilbert includes a sealing device in the form of an inflatable packer 17, which is not an annular cup device. Hence, amended claim 1 is novel over Gilbert, so the 102 rejection is now moot.

35 USC 103 Rejections on the basis of Gilbert in view of Haynes, Raghaven or Hansen

Claims 2 and 5-10 were rejected under 35 USC 103(a) as being unpatentable over Gilbert in view of Haynes (US 5,957,198). Claim 11 was rejected under 35 USC 103(a) as being unpatentable over Gilbert in view of Raghaven (US 5,381,631) or Hansen (US 6,478,088).

Claim 1 has been amended to add the feature of original claim 2, that the sealing device comprises at least one annular cup device.

As acknowledged by the Examiner, Gilbert's sealing device is not an annular cup device, and Gilbert's sealing device instead comprises an inflatable packer.

The Examiner expressed the view that it would have been obvious to replace the seal means 17 of Gilbert with the cup seal means of Haynes since they are equivalent parts for performing equivalent functions.

However, the Applicant respectfully disagrees. Although a cup-type sealing device, as such, is known from Haynes, Gilbert and Haynes show inherently incompatible devices.

Where cup-type seals are used (including both in Haynes, and in the present invention), the outer diameter of the cup-type seal in the absence of external forces is actually larger than the inner diameter of the casing. The cup-type seals are resilient, so they can flex inwardly to allow entry to the casing. Hence, when the cup-type seal is run into the casing, the sides of the cup-type seal already contact the casing (have an initial interference) even before any fluid pressure is applied. When fluid pressure is applied, the cup-type seal seals even more strongly against the wall of the casing.

Hence, permanent interference contact with the casing string in which they are located is an inherent and very well known feature of cup-type sealing devices. This means that the cup devices of both Haynes and the present invention always contact the interior of the wellbore from the moment they are introduced into the well.

Moreover, the property of permanent interference contact makes sense, because if the cup-type sealing devices did not form an initial interference fit inside the casing, this would risk fluids leaking around the seals. These fluids could actually fold the seals further inwards on themselves. This would be extremely dangerous, as significant leakage or destruction of the entire seal could occur. This being so, cup-type seals would not be adequate for subsea use at all and certainly could not be trusted as the only means of preventing blowouts.

Haynes relates to recovery of production fluids, and does not relate to well abandonment. Specifically, Haynes discloses a downhole tool for use with production tubing. The Haynes tool isolates regions of the annulus between the production tubing and the casing that lie in an oil zone from neighboring regions containing water and gas. The Haynes production tubing remains stationary and does not rotate in the well. Fluids produced from the formation flow up the stationary production tubing for recovery.

Gilbert discloses a well-abandonment apparatus that relies on rotation of the drillstring to cut the casing, as explained on column 4, lines 15 to 17. The packer is inflated to cause sealing of the annulus around the well-abandonment apparatus only after the well casing has been cut (see column 4, lines 18 to 22).

Thus, Gilbert and Haynes relate to different devices in different technical fields. Haynes' device is concerned with recovery of production fluids, and comprises a stationary conduit that has cup-type sealing devices. Gilbert's device is for well abandonment, comprises a rotary string, and relies on an inflatable sealing packer 17. It does not necessarily follow that all equipment used in systems for recovery of production fluids would be suitable for use in different well systems for different purposes, such as well abandonment systems. In particular, cup-type sealing devices and inflatable packers are very different, and it is not possible to simply substitute one type of seal for another without taking account of other relevant circumstances.

Specifically, if one were to replace Gilbert's inflatable packer 17 by a cup sealing device, the cup sealing device would be in contact with the casing throughout the entire well abandonment procedure, including the rotary cutting phase. Hence, when the drillstring is rotated to cut the casing, the cup-type sealing device would be abraded at its rim, and would very quickly become worn away through friction between the rotating cup-type sealing device and the casing string. This would totally destroy the integrity of the seal. If such an apparatus were to be used without a Blowout Preventer, this would be exceedingly dangerous, because high pressure fluids from the formation would leak around the edges of the worn seal, possibly leaking into the environment. Hence, for Gilbert, an inflatable packer is essential, because it can be deflated when desired to allow rotation of the drillstring. Any other kind of seal would become worn away by friction during the cutting phase, and under no circumstances could the inflatable packer be replaced by an annular cup-type sealing device.

Furthermore, if a cup-type seal were to be used with a rotating string, the centrifugal force on the cup-type seal would force the cup-type seal out against the casing wall. Hence, the cup-type seal, which is already in contact with the casing, would be forced to engage even more strongly with the casing, causing extreme wear on the cup-type seal, which would quickly fail. This

would be extremely unsafe, and the skilled person, working in the field of well-treatment tools, knowing that safety of personnel is paramount, would never consider the combination of a cup-type seal and a rotating string.

Hence, the person of ordinary skill, seeking to improve Gilbert's well-abandonment apparatus, would never modify Gilbert's apparatus to replace the inflatable packer 17 for the cup-type sealing device of Haynes, because it would be immediately apparent that any such replacement would be useless and even dangerous as a seal, in that the cup-type sealing device would be very quickly worn away when Gilbert's string is rotated. Hence, without performing an ex-post facto analysis with knowledge of the present invention, amended claim 1 is not an obvious extension or combination of the prior art.

Hence, amended claim 1 is inventive over Gilbert, even in view of Haynes.

#### Apparatus claims 3 to 14

As explained above, amended claim 1 is novel and inventive over Gilbert in view of Haynes. Claims 3 to 14 are all dependent on claim 1, and so those claims are also novel and inventive, at least by virtue of this dependency. Hence, all of claims 3, 4 and 12-14, rejected as being anticipated by Gilbert, as well as claims 5 to 10 and 11, rejected as unpatentable over Gilbert in view of Haynes, Raghaven and Hansen, are allowable.

Reconsideration and withdrawal of the objections to claim 1 and claims 3 to 14 is respectfully requested.

#### Method claims 15 to 25

The Applicant appreciates the Examiner's indication that method claims 15 to 23 are allowed. New claim 24 is dependent on claim 15, and hence, this claim is also allowable for the same reasons as claim 15. New claim 25 includes all of the features of claim 15, and hence this claim is also allowable, for the same reasons as claim 15.

Request for Allowance

It is thus believed that the application is now in condition for immediate allowance, and notification to that effect is earnestly solicited. Should the Examiner have any questions or comments regarding Applicants' amendments or response, he is asked to contact Applicants' undersigned representative at (215) 988.3303. Please direct all correspondence to the below-listed address. If there are any fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-0573.

Respectfully submitted,

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